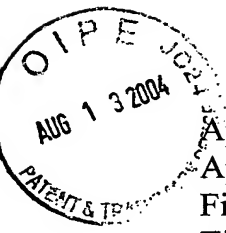


Application No. 10/024,746
Declaration Submitted with RCE Dated August 9, 2004



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appln. No. : 10/024,746
Applicant : Michael Hock
Filed : December 19, 2001
Title : Lightweight Door for
Motor Vehicles

TC/A.U. : 3634
Examiner : Strimbu, Gregory J.

Docket No. : 4680-00001

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)
) *Jo Ann Kuczynski* 8-9-04
) Jo Ann Kuczynski Date

DECLARATION UNDER 37 CFR §1.132 OF HOLLY A. SUTHERLAND

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Holly A. Sutherland, am a Mechanical Engineer and an employee of attorneys for Applicant, Andrus, Sceales, Starke & Sawall, LLP.

I received a Bachelor's Degree in Mechanical Engineering from the University of Wisconsin, Milwaukee, in December, 2001.

I have been employed by Andrus, Sceales, Starke & Sawall, LLP from June, 1988 to August, 1998, and from June, 2003 to the present.

I have reviewed the prosecution history of the above application, and the references cited by the Patent Office in the Office Action mailed April 9, 2004.

In the Office Action, the Examiner rejects claims 32, 33, 36-40, 45-47, 51, 52, 57, 59, 60 and 66 under 35 USC §103(a) as being unpatentable under Widrig et al, U.S. Patent No. 4,876,825 in view of German Patent Publication No. 19616788. Claims 34 and 35 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al '825 in view of German Patent Publication No. 19616788. Claims 41, 42-44, 48-50, 53-56, 58, 61 and 62 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al '825 in view of German Patent Publication No. 19616788, and further in view of Cho U.S. Patent

No. 6,367,863. Claims 63-65 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al '825 in view of German Patent Publication No. 19616788 and Cho '863. Claim 67 has been rejected under 35 USC §1039(a) as being unpatentable over Widrig et al '825 in view of German Patent Publication No. 19616788 and Rashid et al U.S. Patent No. 5,536,060.

In the Office Action, the Examiner states that the Applicant's arguments concerning how the components of a vehicle door are made are not persuasive since the claims are product-by-process claims.

I explicitly disagree with the Examiner's conclusion that the claims at issue recite product-by-process limitations. The basis for my opinion is founded in MPEP §2113 and my understanding of the distinct structural differences between manufactured parts that are pressed or deep drawn, and parts that are cast.

The MPEP states that "the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinct structural characteristics of the final product." §2113.

In the present application, there is a distinct structural difference between the cast supporting frame (11, 12, 13) taught by Widrig et al '825 and the pressed or deep drawn supporting frame claimed in claims 32, 63, 66, 67 and 70. As one skilled in the art, I can attest to the clear structure differences between the respective supporting frames, as defined in the claims. These differences are not at all representative of a process by which a same final product is created. In contrast, structurally, the respective final products are distinctly different.

More specifically, a cast part is known in the art to have both internal and surface defects. As stated in the reply to Office Action of April 9, 2004 in the present application, many inherent defects will exist in a part that is heated and cooled during the casting process. Inherent defects include inclusions, shrinkage cavities, voids, serration, and residual stress and cracks.

Casting is the solidification of liquid metal into a solid shape. Liquid metal is poured into a mold cavity, where it transforms, or solidifies into a solid of the desired shape. Parts that are cast will inherently have internal and surface defects. Non-metallic particles, or inclusions, can be created by oxidation of the liquid metal, or particles entrained from slag, dirt, or refractories when the metal is fed into the mold. Inclusions can initiate cracks when a part is in service. In addition, shrinkage cavities are often created by volumetric shrinkage of the metal during solidification. This type of defect is especially dangerous when the cavities are hidden internally. Gas porosity may also occur when gas bubbles evolved during the solidification become trapped to form small round voids inside the casting. If these voids reach the metal surface and are exposed to the environment, they will oxidize and become permanent. The solidification process also often produces different compositions in different parts of the casting -- this is called segregation. In addition, residual stress and cracks are often generated in a casting as a result of thermal contraction, or strain, that accompanies cooling of metal in the solid state.

Many of the inherent defects discussed above are difficult to detect and often impossible to correct during subsequent processing and can adversely affect the structural strength and other properties of the cast part. If strength and toughness are critical, then cast parts often must be subjected to further processing to improve their properties. This can increase the cost and labor involved in creating the door frame.

In contrast to the teachings of the prior art, including Widrig et al '825, the present application claims a one piece supporting frame that is either a pressed sheet or a deep drawn sheet. Deep drawn and pressed sheets are the result of a mechanical deformation process, whereby a sheet of metal is compressed and bent to form the desired part. Both deep drawn sheets and pressed sheets will inherently be stronger and overcome many of the defects created during casting, as defined above. During the deep drawing and pressing processes, undesirable internal microstructures are broken down and internal cracks welded together by the deformation process. Deep drawn and pressed sheets are processed such that the grains of the metal part are elongated in the working direction.

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Therefore the deep drawing and pressing processes greatly increase the strength and toughness of the sheet, particularly in the direction of elongation, due to strain hardening.

The vehicle door of the present invention, which comprises a one-piece light metal or light metal alloy supporting frame that is either a pressed sheet or a deep drawn sheet is not taught by the references cited by the Patent Office in the present application. The Widrig et al '825 reference teaches directly against such a concept by explicitly requiring that if a vehicle door is one-piece, it be a cast part. The remaining references cited by the Examiner also fail to teach or suggest such a one-piece light metal or light metal alloy supporting frame that is either a pressed sheet or a deep drawn sheet.

In my experience, a one-piece light metal or light metal alloy supporting frame that is either a pressed sheet or a deep drawn sheet will have substantial structural advantages over the vehicle doors taught by the prior art. For example, the vehicle door of the present application lessens the cost of manufacture by eliminating later refining processes required for a cast part.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that the statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: August 9, 2004

By:


Holly A. Sutherland

Attorneys for Applicant:
Andrus, Sceales, Starke & Sawall, LLP
100 East Wisconsin Avenue, Suite 1100
Milwaukee, WI 53202
(414) 271-7590
Attorney Docket No.: 4680-00001